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Original Research Paper

The Relationship between PROLANIS Exercise Routine and Quality of Life in Hypertensive Patients in Puskesmas Oesapa, Kupang City

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Abstract: Hypertension is one of the leading causes of premature death worldwide, including in Indonesia. East Nusa Tenggara Province (NTT) has a high prevalence of hypertension, yet awareness and treatment rates remain low. In Kupang City, Puskesmas Oesapa reports the highest number of hypertension cases. PROLANIS exercise, a non-pharmacological intervention, is considered effective in improving patients quality of life. This study aims to determine the relationship between PROLANIS exercise routine and quality of life of hypertensive patients in the working area of Puskesmas Oesapa. Objective: To investigate the association between the routine participation in PROLANIS exercise and the quality of life of hypertensive patients in working area of Puskesmas Oesapa. Methods: This study used an analytical observational design with a cross-sectional approach. Data were collected through medical records and questionnaires, including medication adherence and the WHOQOL-BREF instrument. Sampling was conducted using total sampling technique and analyzed using Spearman correlation test. Results: The results showed a significant relationship between PROLANIS exercise routine and the quality of life of hypertensive patients, with a p-value of 0.041 ($p < 0.05$). Conclusion: A higher frequency of PROLANIS exercise is associated with better quality of life in hypertensive patients. Therefore, promoting regular participation in PROLANIS exercise should be considered as a strategy to improve the quality of life in this population.

Keywords: Exercise, Hypertension, PROLANIS, Quality of Life.

Introduction

High blood pressure is the primary reason for early deaths globally. According to the World Health Organization, around 1.28 billion individuals aged between 30 and 79 across the globe have high blood pressure, with most of them (approximately two-thirds) residing in low- and middle-income nations. It is believed that nearly 46% of adults with high blood pressure do not realize they have this condition. Furthermore, less than half (42%) have been diagnosed and treated. Only about 1 in 5 adults, or approximately 21% or one in five hypertensive patients, have their blood pressure under control. A global aim regarding non-communicable diseases is to decrease the rate of hypertension by 33% from 2010 to 2030 (WHO, 2023). The highest number of individuals suffering from hypertension reside in the most highly populated nations, mainly in the Western Pacific and Southeast Asia. Southeast Asia has a hypertension prevalence rate of 32%, the third highest rate globally.

However, only 39% of those affected are aware of their condition, and only 30% of them have undergone treatment.(World Health Organization, 2023)

Hypertension is a silent killer, and one in three people with hypertension in Indonesia is unaware that they have it. According to RISKESDAS 2018, 34.1% of the Indonesian population aged 18 years and older has hypertension, while East Nusa Tenggara Province has 76,130 cases (7.2%). Among districts and cities, Kupang City had the fourth highest prevalence in NTT, at 25.61%, affecting 2,274 people. In East Nusa Tenggara Province, it was found that the prevalence of patients who did not regularly seek treatment was quite high, at 38.8% (Kementerian Kesehatan Republik Indonesia, 2018; Sakinah et al., 2020).

Untreated hypertension can lead to a variety of complications and negatively impact the quality of life of the individual affected. The therapeutic approach for hypertension is categorized into two distinct modalities: pharmacological and non-pharmacological. Pharmacological therapy involves the administration of antihypertensive medications, while non-pharmacological therapy encompasses the promotion of a healthy lifestyle, a strategy that has been demonstrated to effectively reduce blood pressure. A plethora of clinical guidelines advocate for the implementation of physical activity or exercise as a component of a healthy lifestyle. Exercise has been demonstrated to impact the circulatory and respiratory systems in a concurrent manner, constituting a component of the body's homeostatic response. For individuals diagnosed with hypertension, the most commonly recommended form of physical activity is aerobic exercise, which includes activities such as jogging. One of the government programs that provides support for exercise in individuals diagnosed with hypertension is PROLANIS exercise.(Melinda et al., 2022; Perhimpunan Dokter Hipertensi Indonesia, 2019).

PROLANIS is a health service framework and active method that is executed in a coordinated way, engaging participants, healthcare providers, and BPJS health. This initiative focuses on the health management of BPJS health members who have chronic illnesses, aiming to reach the best possible quality of life. Prolanis operates a number of work programmes, comprising the following: gymnastics, education, consultation, a Short Message Service (SMS) gateway, and home visits.(Badan Penyelenggara Jaminan Sosial, 2014) Based on earlier studies carried out by Rahmawati in 2019, the implementation of PROLANIS exercises for four weeks in a row has demonstrated a significant decrease in both systolic and diastolic blood pressure (Rahmawati & Aizza, 2018).

Consistent with these findings, Ferdinansih's research (2018) demonstrated that older adults with hypertension who engaged in PROLANIS exercise programs exhibited a higher quality of life compared to those not participating (Manuhutu & Prasetya, 2018)A prior investigation was carried out regarding the connection between PROLANIS workout schedules and the life quality of patients with hypertension at the Kejaksan Health Center and Kalitanjung Health Center located in Cirebon City. The findings of this investigation showed that the rate of exercise displayed a notable one-way relationship with the life quality of individuals with hypertension. In particular, those who took part in the PROLANIS exercise initiative more consistently revealed an enhanced quality of life (Melinda et al., 2022).

Puskesmas Oesapa has been identified as a region within Kupang City that exhibits a high prevalence of patients diagnosed with hypertension. According to data from the Kupang City Health Office, the number of hypertension cases in Kupang City in 2022 was 29,149. Of these cases, Puskesmas Oesapa had a total of 4,985 hypertension patients, including 2,546 men and 2,439 women. Furthermore, Puskemas Oesapa plays an active role in the organization of PROLANIS activities. A review of data from Puskesmas Oesapa in January 2023 reveals that the number of patients registered in PROLANIS was 300, with 209 of these patients diagnosed with hypertension.

In relation to the background of the study, the researcher is interested in knowing the relationship between PROLANIS exercise routines and the quality of life of hypertensive

patients in the working area of the Oesapa Health Center, Kupang City.

Materials and Methods

This study used an observational analytic method with a cross-sectional design to examine the relationship between PROLANIS exercise routine (independent variable) and quality of life (dependent variable). The research procedure is described systematically in Figure 1.

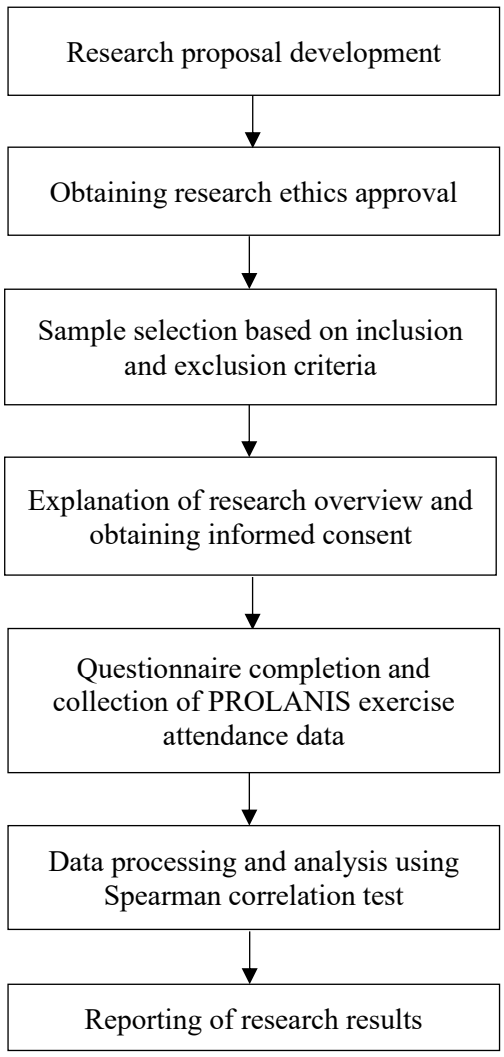

Figure 1. Research Flow

The participants in this research consisted of hypertensive individuals who were enrolled in the chronic disease management initiative (PROLANIS) within the area served by Puskesmas Oesapa in Kupang City, amounting to 209 individuals. In this study, a total sampling technique was used which was taken from the entire population in accordance with the inclusion and exclusion criteria.

This study, the criteria for inclusion involved patients who had received a hypertension diagnosis from a physician, were receiving treatment at Puskesmas Oesapa in Kupang City, had registered and engaged in PROLANIS activities for at least one year, and were prepared to participate by signing the informed consent form. The criteria for exclusion were hypertensive individuals with additional health issues (diabetes, heart conditions, stroke, kidney problems, and others), those facing difficulties in communication, and patients who did not adhere to the prescribed treatment. The study was conducted from February to March 2025. The study was conducted in 6 PROLANIS clubs within the working area of Puskesmas Oesapa Kupang City with respondents filling out the questionnaire directly. Informed consent was integrated in the questionnaires distributed.

Quality of life was measured using the World Health Organization Quality of Life-BREF (WHOQOL-BREF) questionnaire developed by WHO in 1996. This instrument consists of 26 questions with a five-point Likert scale. The WHOQOL-BREF has been translated into Bahasa Indonesia and the last revision was done in 2016. Assessment is carried out by summing the scores in each domain and then transformed into a 0-100 scale according to the established guidelines. The final score is obtained from the average score of each domain that has been transformed. Interpretation of quality of life is divided into three categories with a scale of 0-40 poor, 41-60 moderate, 61-100 good (Hadning & Qurrotu' Ainii, 2021; Melinda et al., 2022).

To determine respondents' adherence when taking anti-hypertensive drugs, the Medication Adherence Rating Scale (MARS-5) questionnaire was used. This survey consists of five items that utilize a Likert scale. The items cover issues such as forgetting to take the medication, altering the dosage, ceasing to use the medication, choosing to omit a dose, and reducing the amount of medication taken. Interpretation is divided into 3 categories: score <19 low adherence level, score 20-22 moderate adherence level, and score 23-35 high adherence level (Farisya et al., 2024; Rachmania et al., 2020).

PROLANIS exercise routine was measured using the percentage of exercise attendance during 2024 from each respondent. Interpretation is divided into 3 categories: <50% rarely, 50-79% often, and >80% regularly (Melinda et al., 2022). To answer the hypothesis, namely the relationship between PROLANIS exercise routine and the quality of life of hypertensive patients, the Spearman correlation test will be used. The analysis was conducted with the SPSS version 30 program. This study has received ethical approval from the Health Research Ethics Committee of the Faculty of Medicine and Veterinary Medicine, Nusa Cendana University (94/UN15.21/KEPK/2024).

Results and Discussion

140 respondents were initially considered for inclusion; however, 14 respondents did not meet the predetermined inclusion and exclusion criteria, as illustrated in Figure 2. Thus, data from 126 eligible study samples were collected and analyzed using the SPSS program.

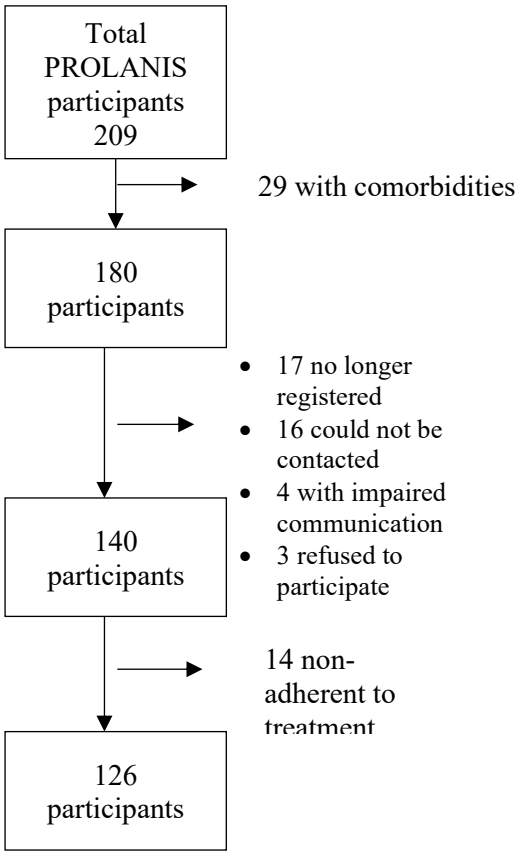

Figure 2. Number of Participants

Based on Table 1, most of 126 samples were in the age range of 60-69 years as many as 59 people (46.7%). The youngest age of the sample was 36 years old and the oldest age was 83 years old. Based on gender, there were more female samples than male samples with a minimal difference of 66 people (52.4%) and 60 people (47.6%). According to the level of education, the sample of PROLANIS participants with hypertension was dominated by high school education, namely 38 people (30.2%) followed by elementary school as many as 35 people (27.8%). Based on their work, most of the sample as many as 53 (42.1%) were not working. When viewed from the characteristics of respondents who were compliant with taking anti-hypertensive drugs, 89 people (70.6%) had high compliance and 37 people (29.4%) with moderate compliance. The characteristics of respondents can be seen in Table 1.

Table 1. Respondent characteristics (*n*=126)

Characteristics	Frequency	Percentage (%)
Age (years)		
≥80	6	4,8
70-79	21	16,7
60-69	59	46,7
50-59	21	16,7
<50	19	15,1
Gender		
Male	60	47,6
Female	66	52,4
Education Level		
College/University	17	13,5
Senior High School	38	30,2
Junior High Scool	18	14,3
Elementary School	35	27,8
No Formal Education	18	14,3
Occupation		
Unemployed	53	42,1
Housewife	50	39,7
Civil Servant	1	0,8
Private Employee	3	2,4
Entrepreneur	13	10,3
Farmer	5	4,0
Driver	1	0,8
Medication Adherence		
High	89	70,6
Moderate	37	29,4

Table 2. The Relationship Between PROLANIS Exercise Routine And Quality Of Life

PROLANIS Exercise Routine	Quality of Life			Total	*p* value	Correlation Coefficient (r)
	Poor	Moderate	Good			
Rarely	4 (3,2%)	4 (3,2%)	7 (5,6%)	15 (11,9%)		
Often	1 (0,8%)	15 (11,9%)	23 (18,3%)	39 (31%)	0,041	0,182
Regularly	2 (1,6%)	20 (15,9%)	50 (39,7%)	72 (57,1%)		
Total	**7 (5,6%)**	**39 (31%)**	**80 (63,5%)**	**126 (100%)**		

Data from 126 participants were analyzed using the bivariate analysis method with the Spearman correlation test. According to Table 2, the p value was found to be 0.041 ($p < 0.05$) along with a correlation coefficient value r of 0.182. This suggests a meaningful connection and a positive correlation between the PROLANIS exercise program and the participants' quality of life, characterized by a weak correlation strength (0.00-0.10 = very weak; 0.10-0.39 = weak; 0.40-0.69 = moderate; 0.70-0.89 = strong; 0.90-1.00 = very strong) (Schober et al., 2018).

Discussion

The quality of life of hypertensive patients is influenced by various aspects, including health status, social support, cognitive function, environment, as well as the presence of chronic diseases such as hypertension itself (Chantakeeree et al., 2022; Siqeca et al., 2022). In this study, the majority of respondents were aged 60-69 years, which is classified as early elderly. With age comes a decline in physiological function and an increased risk of comorbidities, which negatively impacts quality of life (Gurven et al., 2012; Khasanah, 2022). Research in China in 2021 showed that hypertensive patients aged ≥80 years had a lower quality of life than those aged 60-69 years, especially in the aspects of pain and discomfort (Zheng et al., 2021). Meanwhile, it was also reported from study in Thailand that quality of life in the elderly, especially in rural areas, is reduced by long-duration hypertension and comorbidities. However, the study also found that physical activity and positive perceptions of health improved quality of life. Physical activity and positive perceptions of health were shown to improve quality of life (Chantakeeree et al., 2022).

The gender distribution of respondents was almost equal, with slightly more women. Gender is known to affect quality of life. The study by Badr et al. stated that hypertensive women have a lower quality of life than men, influenced by low education, limited income, and high comorbidities (Badr et al., 2021). However, a study from South Korea by Lee and Kim reported no significant differences between men and women, although there were variations in hypertension awareness and control according to age group (Kim et al., 2024).

A significant number of participants reported having a lower-middle educational background. Education is crucial for grasping how to manage hypertension effectively. Research conducted in China indicates that individuals with higher education levels enjoy an improved quality of life, particularly regarding their mobility and everyday tasks (Zhang et al., 2016). Conversely, a study in Indonesia by Nilawati et al. found no significant link between education and quality of life, highlighting the need to take local cultural and social elements into account (Nilawati et al., 2023). When it comes to employment, most of the participants were unemployed. However, data from Riskesdas 2018 reveals that older adults, who typically do not work, demonstrate strong adherence to antihypertensive medications, which positively impacts their quality of life (Rukmini et al., 2021).

A large portion of the individuals in this research displayed a high level of adherence to their medication regimen. This finding aligns with a study conducted in Semarang City, which found a notable connection between adherence to medication and quality of life. Likewise, similar results were observed in Medan, where patients with good adherence exhibited improved blood pressure management and enhanced quality of life (Hutauruk & Khairunnisa, 2020). More than half of the respondents regularly participated in PROLANIS exercises, a physical intervention program for chronic disease patients. A study in Luwu District showed that adherence to PROLANIS exercises was influenced by knowledge, attitude, family support, and

education from health workers (Syiar Cakke et al., 2024).

Most respondents have a good quality of life. Determinants of quality of life in hypertensive patients include age, comorbidities, socioeconomic status, social support, therapy adherence, and self-care behavior. A study in Ghana showed that patients with comorbidities had a lower quality of life, while a study in Malawi showed a significant effect of education level and income.(Amadu et al., 2025; Ding et al., 2024). Social support has been found to enhance the life quality of patients with hypertension, as shown by Li et al., while Kim et al. emphasized the significance of self-care activities for controlling high blood pressure (Crepaldi et al., 2024; Hu et al., 2024).

This research aimed to explore the connection between the PROLANIS exercise program and the life quality of patients suffering from hypertension in the Puskesmas Oesapa area of Kupang City. The analysis results indicated a strong and noteworthy link between the attendance rate at PROLANIS exercises and the quality of life in hypertensive patients, revealing a correlation coefficient of 0.041 and a p value > 0.05. This value is included in the weak correlation category, which indicates that the more often patients participate in PROLANIS exercises, the better the quality of life they experience.

These results support the initial hypothesis and are in line with several previous studies. Research by Rahmawati & Aizza (2018) showed a significant decrease in systolic and diastolic blood pressure after patients attended PROLANIS gymnastics regularly for four consecutive weeks. This decrease in blood pressure is closely related to the improvement of the patient's physical and psychological condition, which in turn has a positive impact on improving quality of life (Rahmawati & Aizza, 2018).

Research findings by Ferdinansih (2018) indicated that there were notable differences in the quality of life among elderly individuals with hypertension who took part in PROLANIS exercises compared to those who did not engage in these activities. Older adults who consistently join gymnastics exhibit improved quality of life ratings, particularly in the areas of physical and mental health. This study reinforces that structured physical activities such as gymnastics have a positive impact on the general well-being of hypertensive patients (Manuhutu & Prasetya, 2018).

This research aligns with findings from Melinda et al. (2022), which indicated that the exercise program known as PROLANIS positively affects the quality of life for individuals with hypertension. The frequency of engaging in PROLANIS workouts has a significant one-way connection to the quality of life in these patients. Additionally, Yusransyah et al. conducted a study in 2020 in Pandeglang, Banten, that assessed the quality of life in hypertensive individuals involved in PROLANIS through the EQ-5D-5L tool. Their findings revealed that educational interventions and physical activities, such as PROLANIS exercises, could greatly enhance the utility score and VAS (Visual Analogue Scale) related to patients' quality of life (Yusransyah et al., 2020).

Although the strength of the correlation in this study is relatively weak, the results still show that routine participation in PROLANIS exercises contributes positively to the quality of life of hypertensive patients. Active participation in these activities can improve the physical, psychological, and social aspects of patients, which overall improves their quality of life. Another study by Avsar and Kizilaslan in 2024 showed that participation in physical activities, both indoor and outdoor, positively contributes to healthy lifestyle behaviors and individual life satisfaction. Although this study did not specifically examine PROLANIS exercises, it supports that regular physical activity can improve quality of life, especially in the elderly population who have chronic diseases, including hypertension (Avsar & Kizilaslan, 2025).

This research enhances the proof that PROLANIS activities significantly contribute to bettering the life quality of individuals with high blood pressure. As more patients engage in this initiative, driven by personal motivation and encouragement from healthcare professionals, the overall quality of life for these individuals can further improve across physical, mental, social, and environmental dimensions.

Strenght and Limitations

Although this study showed significant results, some limitations of the study need to be

noted. This study did not examine confounding factors that may affect the condition of the independent and dependent variables, such as diet, smoking history, and alcohol consumption. This study also assessed overall quality of life without analyzing each domain specifically, namely physical, psychological, social, and environmental and may limit understanding of the aspects of quality of life that are most affected in hypertensive patients. Despite these limitations, this study remains valid in measuring the relationship between PROLANIS exercise routine and quality of life of hypertensive patients using research instruments that have been tested for validity and reliability.

Implications

The results of this study have important implications in efforts to improve the quality of life of hypertensive patients, especially through non-pharmacological interventions such as PROLANIS exercises. The finding that routine participation in gymnastics is positively associated with quality of life indicates the need to increase patient participation in this activity. Therefore, health workers at Puskesmas, especially in the working area of Puskesmas Oesapa, can make PROLANIS gymnastics a flagship program that is not only promotive and preventive, but also curative in the context of hypertension management.

These results also provide a basis for relevant health agency makers to strengthen PROLANIS implementation by ensuring the sustainability of the exercise program, expanding the range of participants, and increasing public awareness of its benefits. Educational programs that emphasize the importance of regular engagement in physical activity need to be improved so that patients can get the maximum benefit from PROLANIS.

In the setting of upcoming studies, these findings offer a chance to explore the lasting impacts of physical activity programs on blood pressure, the occurrence of issues, and particular factors influencing life quality in patients with high blood pressure. Additionally, qualitative studies are required to identify obstacles that prevent patients from joining PROLANIS exercise sessions.

Conclusion

This study shows that there is a significant and positive relationship between PROLANIS exercise routine and the quality of life of hypertensive patients in the Oesapa Health Center working area. The more routine patients follow PROLANIS exercises, the better the quality of life they feel, both in physical, psychological, social, and environmental aspects. This research aligns with findings from earlier studies and strengthens the significant impact of the PROLANIS program as a successful method for enhancing the health of individuals with long-term illnesses. Thus, it is essential to keep expanding PROLANIS activities and to boost involvement with the help of primary care health professionals.

Acknowledgements

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